


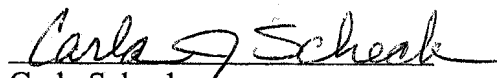
# Biological Assessment for the Glenwood Springs Field Office Fire Management Plan

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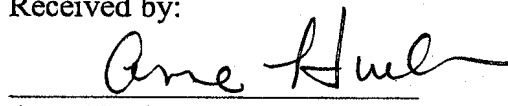
  
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## **I. INTRODUCTION**

This Biological Assessment will analyze the effects of implementing the Glenwood Spring Field Office (GSFO) Fire Management Plan (FMP) on 14 threatened, endangered, and candidate species, and 2 species tending toward listing (Table 1). Effects to these species are analyzed in terms of the effects of implementing the proposed action (the FMP). BLM offices were directed to complete a FMP that will guide wildland fire management and suppression activities, and give guidance for vegetative treatments. The FMP will replace the current management strategy of suppressing all wildland fires.

The GSFO FMP and Environmental Assessment (EA) will amend the GSFO Resource Management Plan (RMP) of 1984 (Revised 1988). The EA will examine wildland fire management and prescribed vegetation treatments on BLM administered lands as proposed in the draft GSFO FMP. The FMP EA will serve as the analysis for implementing wildland fire management. The FMP EA also will serve as a programmatic analysis (general guidance) for "fuel hazard reduction" treatments (vegetation treatments) that could benefit fish and wildlife resources. A site-specific NEPA document/BA will be written for specific prescribed vegetation treatments, incorporating this document by reference. Prescribed vegetation treatments may also be derived from other research, assessments and plans.

**Table 1. List of Species Included in this Analysis**

Common Name	Scientific Name	Federal Status
Razorback sucker	<i>Xyrauchen texanus</i>	(Endangered - Critical Habitat)
Bonytail chub	<i>Gila elegans</i>	(Endangered - Critical Habitat)
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	(Endangered - Critical Habitat)
Humpback chub	<i>Gila cypha</i>	(Endangered - Critical Habitat)
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	(Endangered)
Black-footed ferret	<i>Mustela nigripes</i>	(Endangered)
Canada lynx	<i>Lynx canadensis</i>	(Threatened)
Bald eagle	<i>Haliaeetus leucocephalus</i>	(Threatened)
Uinta Basin hookless cactus	<i>Sclerocactus glaucus</i>	(Threatened)
Boreal toad	<i>Bufo boreas boreas</i>	(Candidate)
Gunnison sage grouse	<i>Centrocercus minimus</i>	(Candidate)
Parachute penstemon	<i>Penstemon debilis</i>	(Candidate)
DeBeque phacelia	<i>Phacelia scopulina</i> var. <i>submutica</i>	(Candidate)
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	(Candidate)
Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>	(BLM Sensitive)
Greater sage grouse	<i>Centrocercus urophasianus</i>	(BLM Sensitive)

## **II. PROJECT DESCRIPTION**

The Fire Management Plan addresses approximately 567,000 acres of BLM administered lands located within the Glenwood Springs Field Office boundary (See Map 1). Public lands will be managed under one of four fire management zones (FMZs) for the purposes of wildland fire and prescribed vegetation management. The descriptions of FMZs are based on Bureau of Land Management Instruction

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**“A” FMZs** *Areas where fire is not desired at all.*

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*General description:* This category includes areas where mitigation and suppression is required to prevent direct threats to life or property. It also includes areas where fire never played a large role historically in the development and maintenance of the ecosystem, or because of human development fire can no longer be tolerated without significant loss or where fire return intervals were very long.

*Fire Mitigation Considerations:* Emphasis should be focused on prevention, detection, and rapid suppression response and techniques that will reduce unwanted ignitions and threats to life, property, natural and cultural resources.

*Fire suppression considerations:* Virtually all wildland fires would be actively suppressed and no fire is prescribed except as required to combat an immediate threat to firefighter or public health and safety.

*Fuel treatment considerations:* Non-fire fuel treatments should be employed. Unit costs for prescribed fire would be too prohibitive to implement efficiently. Pile burning of mechanically removed vegetation is acceptable.

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**“B” FMZs** *Areas where unplanned wildland fire is not desired because of current conditions*

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*General Description:* Fire plays a natural role in the function of the ecosystem, however these are areas where an unplanned ignition could have negative effects unless/until some form of mitigation takes place. Sagebrush ecosystems, for example, can fall into this category because of encroachment of cheatgrass or a prolonged lack of fire which leads to large monotypic stands of sagebrush that won't burn as they would have historically.

*Fire Mitigation Considerations:* Emphasize prevention/mitigation programs that reduce unplanned ignitions and threats to life, property, natural and cultural resources.

*Fire suppression/use considerations:* Fire suppression is usually aggressive.

*Fuel treatment considerations:* Fuel hazard reduction as a major means of mitigation potential risks and associated loss are a priority. Fire and non-fire fuels treatments are utilized to reduce the hazardous effects of unplanned wildland fire. Restorative treatments may consist of multiple non-fire treatments before the use of fire will be considered. Unit costs for prescribed fire are high and require stringent mitigation and contingencies. Concurrently, achieve fire protection and resource benefits, when possible.

***“C” FMZs Areas where wildland fire is desired, but there are significant constraints that must be considered for its use.***

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*General Description:* Fire is a desirable component of the ecosystem, however, ecological, social or political constraints must be considered. These constraints could include air quality, threatened and endangered species considerations (effect of fire on survival of species), or wildlife habitat considerations.

*Fire Mitigation Considerations:* Programs should mitigate potential threats to values before ignitions occur and reduce unwanted human ignitions.

*Fire suppression/use considerations:* Ecological and resource constraints along with human health and safety, etc., are utilized in determining the appropriate suppression tactic on a case by case basis by the incident commander and sub-unit line officer. Areas in this category would generally receive lower suppression priority in multiple wildfire situations than would areas in “A” or “B” FMZs.

*Fuel treatment considerations:* Fire and non-fire fuels treatments may be utilized to ensure constraints are met or to reduce any hazardous effects of unplanned wildfire. Significant prescribed fire activity would be expected to help attain desirable resource/ecological conditions. Prescribed fire for hazard/fuel reduction are of a lower priority than in “B” zones. Prescribed fire unit costs are low to moderate and are generally non-complex. Concurrently, achieve fire protection and resource benefits, when possible.

***“D” FMZs Areas where wildland fire is desired, and there are few or no constraints for its use.***

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*General Description:* Areas where unplanned and planned wildfire fire may be used to achieve desired objectives such as to improve vegetation, wildlife habitat or watershed conditions.

*Fire Mitigation Considerations:* Implement programs that reduce unwanted human-caused ignitions, as needed.

*Fire suppression/use considerations:* These areas offer the greatest opportunity to take advantage of the full range of options available for managing wildfire under the appropriate management response. Natural occurring fires under prescribed conditions are permitted to run their course where approved Fire Management Action Plans or Prescribed Fire Plans exist. Health and safety constraints will apply. Resource use considerations similar to those described for Category C may be identified if needed to achieve resource objectives. Areas in this category would be the lowest suppression priority in a multiple fire situation.

*Fuel treatment considerations:* There is generally less need for hazard fuel treatment in this category. Prescribed fire for fuel hazard reduction is not a priority except where there is an immediate threat to public health and safety. If treatment is necessary, both fire and non-fire treatments may be utilized, as allowed by the land use plan. Prescribed fire to obtain desired resource/ecological condition is appropriate.

Figure 6.1 - Management Zones Overview

		Wildland Fire Management			Vegetation Treatments	
		Suppression Priority	Suppression Strategy	Wildland Fire Use strategy *	Prescribed Fire	Mechanical/ Chemical/Hand Biological/
<b>A FMZ</b>	Fire not desired at all.	High	Aggressive suppression	No	No, except pile burning of mechanically removed vegetation.	Yes
<b>B FMZ</b>	Unplanned wildland fire not desired.	High	Aggressive suppression	No	Yes, fuel hazard reduction to mitigate risks a priority.	Yes
<b>C FMZ</b>	Wildland fire desired - must consider significant constraints.	Moderate	Appropriate suppression responses	No	Yes, fuel hazard reduction lower priority than “B” FMZs; used to attain desirable resource conditions.	Yes
<b>D FMZ</b>	Wildland fire desired - fewer constraints.	Low	Appropriate suppression responses	Yes, natural occurring fires under prescribed conditions	Yes, used to attain desirable resource conditions; fuel hazard reduction is lower priority than “C” FMZs.	Yes

\* Wildland Fire Use (WPU) is the intentional use of naturally occurring fires for resource benefit.

## VEGETATION TREATMENT DESCRIPTIONS & GUIDELINES

In addition to managed wildland fire, and prescribed fire, the GSFO anticipates using; manual, mechanical, chemical and/or biological methods to treat vegetation. Not all treatments are suitable for all vegetation types. Treatments will vary depending on factors including; the condition of the vegetation, vegetation management goals, proximity to development, time of year and various environmental circumstances. Often several types of treatments may be used in combination. For example mechanical treatments may be used to create fuelbreaks before a prescribed fire. More information on managing competing and unwanted vegetation can be found at [http://www.fs.fed.us/r6/weeds/methods\\_herbi\\_pdf.htm](http://www.fs.fed.us/r6/weeds/methods_herbi_pdf.htm).

### **Manual**

Non-powered hand tools and powered tools, including chain saws and motorized brushcutters, are used to cut, clear, thin or prune herbaceous and woody vegetation. Hand tools include axes, brushhooks, hoes, and hand clippers.

### **Mechanical**

Mechanical methods include thinning and piling, crushing, cutting, chipping, lopping, cutting, harrowing, and chaining. Rubber-tired and treaded heavy equipment outfitted with blades or mowing attachments are most commonly used for mechanical treatments. Often fuelbreaks are created to help change the behavior of a wildland fire by modifying the fuel structure in an area immediately adjacent to or surrounding developments and sites to be protected in the wildland urban interface.

Thinning. Thinning reduces stand density by removing stems in the understory, mid-story and overstory. Once thinning is accomplished, the slash may be treated in several ways, including piling the material so it can be burned. Piles will be burned in the fall and winter season and potentially during the summer if conditions become suitable. The actual piling of the material may be accomplished by hand or machine-piled. Equipment such as dozers and small tractors will haul the material to piles. Slash may also be pushed or dragged into windrows. Some slash may be "rough-piled" or "jackpot piled" where heavier concentrations of fuel are left where they fell and burned on site. Material that is large enough to be of commercial value, usually >6" may be removed to a landing using a rubber-tire skidder, or tracked vehicle. Both rubber-tire skidders and tracked skidders are used.

Crushing. Crushing involves dragging a large drum with spokes or spikes protruding over the vegetation, effectively breaking the fuel into smaller pieces.

Chipping. Chipping is a process where slash is forced through a chipping machine, reducing the larger pieces of slash to small chips that are left on site to naturally decompose. Tractors with attached discs, like the Hydro-ax, are also used to remove unwanted vegetation. Machines can either partially or totally clear a site.

Lopping. Lopping is where large cutting tools are attached to a "Bobcat" type tractor and trees are cut off at ground level. The trees can be left to lay where they fall, assisting in soil retention or piled and burned.

Cutting. Graders and other machines use attached brush cutters for roadside brush control and generally travel on the road surface.

Chaining. Dozers can drag cable or chain systems to remove vegetation.

Harrows. Harrows are pulled behind a tractor to reduce canopy cover of vegetation, mainly used in sagebrush habitats.

### **Chemical**

Herbicides may be used to control competing and unwanted vegetation. These chemicals kill plants by disrupting biochemical growth processes. Herbicides are usually applied as liquids mixed with water or oil carriers. Some herbicides are applied in solid form, usually as granules placed on the soil surface to be absorbed by plant roots.

Four methods of applying herbicides may be considered:

1. aerial application
2. mechanical equipment, truck or ATV mounted sprayers;
3. backpack equipment, generally a pressurized container;
4. hand application, painting cut surfaces or application of granular herbicides to the soil.

### **Biological**

Prolonged or forced grazing of cattle, sheep or goats may be used to control both noxious weeds and the composition or amount of vegetation. This differs from the typical grazing program in that vegetation control, rather than animal weight gain or forage utilization, is the primary objective.

### **Level of Vegetation Treatments**

Pending funding, planning priorities and climatic conditions, the reasonable foreseeable broad vegetation treatment level for the GSFO is assumed to be no more than 10% of the Resource Area over a 10 year period.

### **Vegetation Treatment Guidelines**

The following guidelines will be considered in site-specific projects. Additional project-level environmental analyses may determine the need for additional considerations.

Vegetation treatments within mapped potential Canada lynx habitats will be planned in a manner consistent with conservation measures outlined in the *Canada Lynx Conservation Assessment and Strategy* (2000) Chapter 7 - Pages 7-1 to 7-17. Considerations include;

- Attempts will be made to keep linear openings (fire line, access routes and escape routes) out of mapped potential habitat, while attempting to protect key components such as denning areas.
- Avoid constructing permanent firebreaks on ridges or saddles in lynx habitat.
- When managing wildland fire or planning vegetation treatments, minimize creation of linear openings (fire line, access routes and escape routes) that could result in permanent travel ways for competitors and humans.
- Linear openings (fire line, access routes and escape routes) associated with fire suppression or vegetative treatments constructed within lynx habitat will be obliterated and reclaimed in order to deter future human and competitive species use.
- Livestock grazing may be deferred following wildland fires or vegetative treatments to ensure the reestablishment of key plant species. Resource goals and objectives will be

used to determine the need for this restriction and the length of the deferment on a case by case basis. This determination will be made by BLM personnel.

- Planning of treatments will ensure that no more than 30% of lynx habitat within an Lynx Analysis Unit will be in unsuitable condition at any time. If the 30% threshold is already exceeded then no further reduction shall occur as a result of vegetation management. In addition, particular consideration will be given to amounts of denning habitat, condition of summer foraging, winter foraging and shrub-steppe habitats, and habitat linkages, to ensure that treatments do not negatively impact lynx. Design burn prescriptions to regenerate or create snowshoe hare habitat (e.g., regeneration of aspen and lodgepole pine).

, Pile burning of mechanically cleared vegetation/debris is acceptable in “A” FMZs. Cleared vegetation and debris will not be piled or burned on top of special status plant populations.

, Equipment used in vegetation treatments should be washed and weed-free before arriving on-site.

, Except where specific treatments are designed to control or manage vegetation within riparian areas, treatments will be designed to avoid riparian areas. Adequate buffer strips around water courses and drainages may be necessary to protect riparian areas. The extent of the buffer strip depends on a number of factors such as the slope, the type of treatment, acres treated, current vegetation condition, etc., and will be determined on a case by case basis through a site-specific environmental analysis.

, No vegetation treatments within bald eagle wintering habitat, excluding riparian restoration projects.

, No vegetation treatments will be conducted within the boundaries of Uinta Basin hookless cactus populations.

, Vegetation treatments conducted on uplands adjacent to streams occupied by Colorado River cutthroat trout will be conducted in a manner that limits potential for soil erosion and sedimentation and increases vegetative ground cover. This includes riparian restoration work intended to improve habitats.

, Vegetation treatments within mapped sage grouse habitats will be designed to improve sage grouse habitats as prescribed in the *Guidelines to manage sage grouse populations and their habitats* (Connelly, Schroeder, Sands and Braun 2000).

, Vegetation treatments conducted on uplands adjacent to the Colorado River will be designed and conducted in a manner that limits potential for soil erosion and sedimentation and increases vegetative ground cover. This includes riparian restoration work, and salt cedar removal, intended to improve habitats. Where erosion potential is high, establish baseline water quality data prior to conducting vegetation treatments and conduct water quality studies until the site is revegetated and soils are stabilized to determine impacts of vegetation treatments on water quality.



Vegetation treatments will not occur within or near nest habitats used by Peregrine falcons.

When prescribing vegetation treatments, consider visual qualities in Visual Resource Management (VRM) Class I and II areas where the classification goal is to preserve the landscape character and landscape modifications are not evident.

### **III. ASSUMPTIONS IN MAKING DETERMINATION OF EFFECTS**

This Biological Assessment for the USFWS will be valid until such factors trigger the need for a reassessment. These factors include, but are not limited to, the proposed listing or listing of a species or critical habitat, new information regarding listed species and/or their habitats, impacts not previously considered, and major changes in the fire plan and its implementation. Wildland fire and non-compliance with any minimization or mitigation measures specified in this document will result in the initiation of emergency consultation.

This Biological Assessment covers management of wildland fires and their use, and also discusses some parameters for vegetative treatments. Site specific vegetation treatments will be designed within the parameters set forth in the fire plan and outcomes from this consultation. A site-specific NEPA document will be developed for each project implemented under the guidance of the FMP and effects to listed species will be analyzed through a site specific NEPA document and BA when appropriate.

A biological assessment/evaluation titled “Biological Assessment/Evaluation of Aerially Delivered Fire Retardant Guidelines”, was completed on October 1, 2000. This assessment addressed potential impacts to terrestrial wildlife species and it was determined that “Because of the very limited possibility of influencing potential effects to terrestrial TEPS [Threatened, Endangered, & Proposed Species], use of [following of] the Guidelines is expected to have no effect, or discountable or insignificant effects.” As such, potential impacts to terrestrial species from the use of aerially delivered fire retardant will not be analyzed further in this document.

BLM is not required to consult with the USFWS on Candidate species. However, because it is likely that one or more of the Candidate species addressed in this Biological Assessment may become listed during the life of the FMP, “Determination of effects” calls will be made for Candidate species, and these species will be treated as if they were currently listed. This will streamline future plan maintenance and consultations should one or more of the candidate species become listed during the life of the plan.

Fire can and often does destroy endangered species and alters critical habitat. However, naturally occurring fire itself is considered a natural disaster or an act of God in the sense of 50 CFR §402.05. Of paramount importance is the safety of the firefighters and the protection of life and property. If a suppression action is determined to be necessary to control a wildfire, save lives and/or property, and ensure that fire crews can do their jobs safely and efficiently, then it is appropriate to act even if it results in the take of an endangered species. No wildland fire suppression guideline, for protection of endangered species or their habitat, will be considered if the Fire Management Officer or Incident Commander feel they place firefighters or life or property in danger. In the event any of the proposed minimization/mitigation measures can not be fully implemented or adhered to, the Glenwood Springs Field Office will initiate Emergency Consultation per 50 CFR §402.05.

## **IV. SPECIES DESCRIPTIONS, HABITAT, EVALUATIONS & DETERMINATIONS**

### **Black-footed ferret**

#### **Affected habitat description and status within the planning area**

Black-footed ferrets historically occurred throughout much of the western United States where large colonies of prairie dog towns were present. Black-footed ferrets have not been documented as occurring within the planning area, and it is likely that this species was never common within the planning area due to the lack of suitable habitat. The majority of lands (particularly public lands) within the planning area are steep and rugged. The limited habitats that do exist for this species have been altered due to a number of factors including roads & highways, commercial and residential development, pipelines, powerlines, and agriculture.

Prairie dog surveys conducted by the CDOW in 1988 resulted in the identification of 6 prairie dog colonies within the planning area. Historic data and records indicated that 12 prairie dog colonies may have existed within the planning area boundary. The largest known site is approximately 150-acres of mostly private land located near I-70 at DeBeque, CO. Five smaller towns all approximately 20-acres in size are located north of Rifle, north of Gypsum on private lands, east of the Eagle airport on private lands, and south of the Eagle airport on BLM lands. The only known ferret population in the state is a recently reintroduced population located in Moffat County. The USFWS has determined that, at a minimum, potential habitat for black-footed ferrets must include a single white-tailed prairie dog colony of greater than 200 acres, or a complex of smaller colonies within a 4.3 mile (7km) radius circle totaling 200 acres (USFWS 1989). None of the prairie dog colonies within the planning area are of a size or prairie dog density sufficient to sustain black-footed ferrets.

#### **Analysis of effects**

Overall, the implementation of the FMP should result in long-term benefits to this species. Fire and vegetative treatments may help to improve and create habitat important for this species. Many of the desert shrub and grassland habitats located within the planning area have been invaded by woody species due to years of aggressive fire suppression. Fire and vegetative treatments within these habitats may help to reduce woody species and produce and maintain more grassland habitats. This could result in expansion of suitable habitat for prairie dogs and possibly black-footed ferrets.

#### **Direct Effects**

Implementation of the FMP should have no direct adverse impacts to this species. No black-footed ferrets are known to reside on BLM lands within the planning area, and no prairie dog colonies of sufficient size and density exist within the planning area.

#### **Indirect Effects**

Fire and vegetative treatments could potentially have some indirect effects to black-footed ferrets. Impacts could occur to prey species (prairie dogs) if conducted within occupied prairie dog habitat. Impacts would be short-term, affecting the availability of some herbaceous food sources for prey species for a short time. However, underground roots would likely sustain prairie dogs until such time as grasses and forbs reestablish. Suppression activities could result in some short-term negative effects due to the potential use of heavy equipment and fire line construction in prairie dog habitat.

### **Determination of effects**

It is very unlikely that black-footed ferrets occur within the planning area. Prairie dog surveys conducted by the CDOW in 1988 resulted in the identification of 6 prairie dog colonies within the planning area. The largest known site is approximately 150-acres of mostly private land located near I-70 at DeBeque, CO. Five smaller towns all approximately 20-acres in size are located north of Rifle, north of Gypsum on private lands, east of the Eagle airport on private lands, and south of the Eagle airport on BLM lands. No historic records could be found pertaining to the existence of black-footed ferrets within the planning area, and the only known ferret population in the state is a recently reintroduced population located in Moffat County. Although some indirect impacts could result from fire and suppression related activities to prairie dogs the ferrets main prey, due to a lack of suitable habitat and limited prey base, the implementation of the FMP is not anticipated to have any negative effects on this species. However, with limited survey information, it would be difficult to say definitively that no black footed ferrets reside in the planning area. **Therefore, it is the determination that the proposed implementation of the FMP “may effect, but is not likely to adversely effect the black-footed ferret”.**

### **Southwestern willow flycatcher**

#### **Affected habitat description and status within the planning area**

The southwestern willow flycatcher is a migratory species that breeds in the southwestern U.S. Suitable nesting habitat for this species is described as thickets of trees and shrubs approximately 13-23 feet in height, with dense foliage approximately 13 feet above the ground, and a high percentage of canopy cover. Generally all nesting southwestern willow flycatchers prefer willows with surface water nearby. This species has also been documented as nesting in salt cedar in parts of Arizona.

Southwestern willow flycatchers have not been confirmed to nest on public lands located within the GSFO planning area. A few incidental occurrences have been noted within the GSFO planning area along the Colorado River mainly on private lands. Suitable but unoccupied habitat has been identified on BLM land on a small portion of Wallace Creek south of the town of Battlement Mesa. Surveys of Wallace Creek for this species have been conducted and to date, no birds have been detected. The potential for occupation is limited due to the distance of Wallace Creek from other potentially suitable habitat located over 5 miles away along small, scattered portions of the Colorado River.

#### **Analysis of effects**

Implementation of the FMP should have minimal long-term or direct impacts to this species. No willow flycatchers are known to nest on BLM lands within the planning area. Suitable habitat is limited to a small portion of Wallace Creek, and surveys have not detected the presence of any birds.

##### **Direct Effects**

There is the possibility that vegetative treatments, and suppression actions could directly impact this species. The use of fire retardant, and noise from heavy equipment in close proximity to occupied habitats (should occupation ever occur) could have short-term, direct impacts to nesting birds and could lower nesting success and productivity.

##### **Indirect Effects**

Fire, associated suppression activities, and vegetative treatments should have little indirect effect to this species. There is the possibility that smoke and noise from wildland fires and related suppression activities could indirectly impact nesting birds. This could result in nest abandonment and reduce productivity.

In order to minimize potential impacts, both direct and indirect, to this species, the following minimization measures will be followed:

- Conduct surveys prior to any vegetative treatments within potential or suitable habitat.
- Where surveys detect birds, do not implement vegetative treatments between May 1 and August 15.
- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life.

\*Exceptions (as per National Office of Fire and Aviation - Instruction Memorandum No. 2000-011):

- *When alternative line construction tactics are not available due to terrain constraints, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than an airtanker).*
- *When life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.*
- *When potential damage to natural resources outweighs possible loss of aquatic life, the FM or acting FM may approve retardant or foam use within 300 feet of waterways.*

### **Determination of effects**

There is the possibility that direct disturbance could occur via smoke, noise, and human presence should nesting ever occur within suitable habitats located in the planning area. However, the mandatory minimization measures will reduce adverse impacts to suitable and potential flycatcher habitat.

**Therefore, it is the determination that the proposed implementation of the FMP with the minimization measures “may affect but is not likely to adversely affect the southwestern willow flycatcher”.**

### **Big River Fishes (Colorado pikeminnow, razorback sucker, bonytail chub, humpback chub)**

#### **Affected habitat description and status within the planning area**

Within the planning area, the Big River Fishes historically occurred within the Colorado River from the town of Rifle downstream. These fishes require a diversity of habitats within the Colorado River, particularly during certain life stages. Low velocity side channels, backwaters, oxbows, sloughs, and flooded bottom lands are all important habitats for both young and adult fish. The Colorado River, and its 100-year floodplain from the town of Rifle downstream is designated critical habitat for the razorback sucker and Colorado pikeminnow. Critical habitat for the bonytail and humpback chub is located in the Blackrocks area of the Colorado River near the Colorado-Utah state line.

The decline of these fishes is mainly attributed to changes in the Colorado River resulting from the impoundment of large portions of the mainstem and its tributaries. In addition, irrigation, commercial, and domestic use, and dams have dewatered, cooled, and altered much of the river system. The “controlling” of the river has resulted in losses of habitat and natural function such as flooding. In addition to losses of habitat, many of these changes in the river system have resulted in more favorable conditions for non-native fishes. Non-native fishes which are now common, compete for resources including food, space, cover, and physical habitat, and are known to prey on native fishes.

### **Analysis of effects**

Overall, the Big River Fishes should benefit from the implementation of the FMP. As upland habitats burn or are treated, improved vegetative cover should result which will help to stabilize soils and minimize erosion and sediment impacts. The implementation of the proposed action will also reduce the threat of larger catastrophic fire by reducing hazardous fuels within the Colorado River drainage. These fish all evolved and are well adapted to the historically high sediment loads that the Colorado River carried. Erosion within the Colorado River basin has always played a factor in the maintenance of habitats important to these fishes. In addition, it is important to note that studies have shown that large wildland fires are important to maintain and provide long-term stream habitat complexity that can benefit instream biodiversity and threatened and endangered species habitat (Everest et al. 1987. Reeves et al. 1995).

#### Direct Effects

Direct effects from fire and vegetative treatments should be minimal on these fishes. However, there is the possibility that the use of fire retardant directly adjacent to or within tributaries, or the mainstem of the Colorado River could result in direct negative impacts.

Fire retardant when mixed with water and exposed to UV radiation, breaks down to form hydrogen cyanide (HCN), which is extremely toxic to aquatic life. In addition, Ammonia ( $\text{NH}_3$ ), which is highly soluble will result when retardant is placed into water. When ammonia dissolves in water a chemical equilibrium is maintained between ammonia, which is toxic, and ionized ammonia ( $\text{NH}_4^+$ ) which is less toxic. The chemical balance between these two forms of ammonia is determined by pH, temperature, and total ammonia concentration. In most streams, the pH is sufficiently low and  $\text{NH}_4^+$  predominates. However, in highly alkaline waters,  $\text{NH}_3$  concentrations increase and can reach toxic levels. Ammonia in the range of 0.2 to 2.0 mg/L can be lethal to fishes. The toxicity of retardant to aquatic life is generally due to these two components (free cyanide and ammonia).

No direct negative effects from fire retardant are anticipated to occur to either the bonytail or humpback chub, since occupied habitat is located over 70 river miles downstream from the western boundary of the GSFO planning area. Even if retardant was to enter the river at the western edge of the planning area boundary its effects would be negated prior to reaching occupied/critical habitat. Harmful chemicals would have ample time to mix with the large volume of river water and would be diluted to non-toxic levels.

Other factors resulting from wildland fires include the potential for large, acute influxes of heated slag and ash which can have both immediate and direct impacts to fishes. This is due mainly to elevated water temperatures to lethal limits. Water quality may also become impaired as changes in pH can negatively impact fishes. In addition, fish can be negatively affected due to increased

phosphate levels as phosphate is leached from ash. There would be no impacts associated with these potential events on the bonytail or humpback chub. Heated slag and ash resulting from fires within the planning area boundary, would quickly be diluted with large volumes of river water prior to reaching occupied/critical habitat.

#### Indirect Effects

Indirect effects to these fish would be minimal and short-term. There is the potential for erosion due to losses of soil stabilizing vegetation on upland sites adjacent to tributaries or the mainstem. Erosive areas located on BLM lands within the planning area have been identified and management prescriptions reflect consideration of the effects of large fires in critical watershed areas. Loss of upland vegetation could result in increases in surface water runoff and subsequent higher peak flows. Suppression efforts could also result in some short-term impacts, including the construction of fire lines which could subsequently increase erosion potential.

However, these fish are well adapted to the high silt load conditions of the Colorado River. Potential increases in sediment resulting from the implementation of the FMP would have negligible effects to these fishes or designated critical habitats, and could be beneficial by limiting productivity of non-native fishes that are not adapted to high silt conditions.

The U.S. Fish and Wildlife Service (USFWS) has determined that any Federal action that will deplete water in the basin will prompt a "May Affect" Jeopardy determination under Section 7 of the Endangered Species Act. Thus the use of water to assist in the suppression of wildland fires will be considered. It has been estimated that no more than 1-acre foot of water would be used during any given year for fire suppression activities occurring within the planning area. However, all water depletions regarding fire suppression activities will be summed up and added to the yearly log submitted to the USFWS. This action is covered by the amendment to the programmatic biological opinion (March 2, 2000) that addresses minor water depletions within the Colorado River basin in western Colorado.

To reduce potentially negative effects, both direct and indirect, the following minimization measures will be followed:

- Minimize losses of vegetation within the Colorado River drainage and associated tributaries to minimize the potential for erosion of sediments into the Colorado River.
- In conjunction with the reclamation of fire lines, provide for drainage with water bars on constructed hand/dozer lines and impacted areas in critical watershed areas (see Part 12 for guidelines).
- Fire line placement within the Colorado River corridor and its major tributaries should be coordinated with the resource advisor and as needed with Bureau hydrologists to minimize erosion concerns.
- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life. (See exceptions under southwest willow flycatcher).
- The amount of water used for fire abatement will be added yearly to the water depletion log to account for these water depletions.

## **Determination of effects**

The implementation of the FMP with the mitigation measures noted above, should reduce impacts to insignificant, discountable levels. However, the potential for negative impacts associated with wildland fires will still exist. It has already been determined that any actions resulting in a depletion of water result in a “May Effect” determination for all 4 fishes. cts to these fishes. **Therefore, it is the determination that although the proposed mitigation measures will essentially eliminate negative effects, implementation of the GSFO FMP “may affect, likely to adversely affect” the Big River Fishes.** In addition, the proposed action “**may result in short-term adverse modification of critical habitat designated for these fishes.** Although determined to be a “may affect”, the water depletion issue will be covered via the amended programmatic biological opinion (March 2, 2000) that addresses minor water depletions within the Colorado River basin in western Colorado.

If during a severe fire event that threatens life or property, the minimization measures outlined above can not be adhered to, then these fishes could be adversely affected. Potential impacts include but are not limited to: large influxes of ash, sediment, and in particular fire retardant. In the event this situation occurs, Emergency Consultation will be promptly initiated, and adverse impacts documented and mitigated for to the extent practicable.

## **Bald eagles**

### **Affected habitat description and status within the planning area**

Bald eagles are known to winter along portions of the Colorado River and its major tributaries within the planning area. Results of past CDOW mid winter bald eagle counts and limited surveys have resulted in the detection of no active nests on BLM lands within the planning area boundary (Gene Byrne - CDOW pers. comm.).

Wintering bald eagles are generally present within the planning area from mid-November to mid-April. Large mature cottonwood trees along the Colorado and Eagle rivers and their major tributaries are used as roosting and perching sites and these waterways provide the main food sources of fish and waterfowl. Upland habitats adjacent to these waterways are used as scavenging areas primarily for winter killed mule deer and elk.

Within the planning area boundary, very little public land exists within mapped bald eagle winter habitat. The majority of winter roost habitat is found on private lands located along the river and creek bottoms.

## **Analysis of effects**

### **Direct Effects**

No direct effects are anticipated to this species. Bald eagles occupy habitat within the planning area from mid-November to late April. This is the timing of occupation of winter habitat. Fire does not generally occur during this time period. However, if wildland fire was to occur during the wintering period, impacts associated with the fire and related suppression activities would be minimal. Individual birds would be displaced to other suitable roosting sites along river and stream corridors.

### Indirect Effects

There is the potential for short-term and indirect impacts associated with vegetative treatments and wildfire. Human activity may cause auditory or visual disturbance to foraging or wintering bald eagles. These impacts would be short-term and localized and will not effect the overall distribution of the species. Wildfires within winter roost habitat could indirectly impact bald eagles by reducing the quantity and quality winter roost habitat. In addition, a short-term reduction in fish species, the bald eagles main food source, could result due to wildfire and related suppression activities. Impacts to fishes are addressed under the Big River Fishes above. This could reduce food resources for a short time. Impacts to nesting bald eagles is not anticipated as no bald eagles are currently known to nest on public lands within the planning area.

In order to minimize effects, both direct and indirect, to potential nesting bald eagles, the following minimization measures are required:

- Avoid vegetative treatments, within ½ mile of known bald eagle nest sites between December 15 and June 15.
- Avoid unnecessary tree cutting within ¼ mile of known roost trees.
- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life. (See exception under southwest willow flycatcher).

To reduce indirect effects to bald eagles from potential modification of winter roost sites, the following minimization measures are required:

- Avoid vegetative treatments, within ¼ mile of known roost trees from Nov 16 to April 15.
- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life. (See exception under southwest willow flycatcher).

### **Determination of effects**

No direct effects are anticipated to occur to this species. However, there is the potential for indirect/short-term impacts. Treatments may disturb foraging birds and could potentially impact and disturb some winter roost habitat. Wildfires and related suppression activities could reduce the quantity and quality of winter roost habitat, and could result in short-term losses of fish, the eagles main winter forage species. The mandatory minimization measures should adequately reduce negative impacts.

**Therefore, it is the determination that the proposed implementation of the FMP with the minimization measures “may affect, but is not likely to adversely affect the bald eagle or its habitat”.**

### Canada lynx

#### **Historical Perspective**

Wildland fires have been aggressively suppressed for nearly 100 years. This has reduced habitat quality and quantity for a variety of wildlife species including lynx. Canada lynx evolved with fire which historically helped to maintain the diversity of habitats important for it and its prey species.



In addition to the aggressive suppression of fire, a variety of land management practices have reduced the quality and quantity of lynx habitat across their range. Timber management, grazing, trapping, insects and disease, increased residential and commercial developments, weeds, and roads and highways, have all played a part with regard to the current status of lynx and the condition of their habitat.

Although losses of habitat associated with human development will continue to impact lynx, the FMP can be used as a pro-active management tool to re-introduce fire back into the ecosystems important to lynx. In addition, well planned vegetative treatments following direction in the FMP and outlined in the *Canada Lynx Conservation Assessment and Strategy - (2000)*, should help to improve and maintain habitats important for lynx and its prey species. All vegetative treatments will follow standards and guidelines outlined in the Conservation Measures portion of the LCAS. Rather than restate all of the measures in this document, the following chapter/pages are noted, and will guide project design and implementation: Chapter 7, pages 7-1 to 7-17.

### **Affected habitat description and status within the planning area**

Within the planning area, potential lynx habitat is associated mainly with lodgepole pine, subalpine fir, Engelmann and blue spruce, and aspen cover types. Potential lynx habitat is found in the subalpine and upper montane forest zone, roughly between 8,000 and 11,300 feet elevation within the planning area. Lower montane forests are likely to be important for movement and dispersal.

The majority of potential lynx habitat within the planning area is of marginal quality. The best habitats are located in the Castle Peak, King Mountain, and Black Mountain areas, plus small, scattered parcels abutting the White River and Routt National Forests. Winter foraging, and denning habitat for lynx includes subalpine fir, lodgepole pine, and Engelmann and blue spruce cover types with abundant prey species/and or dense woody debris. Conifer-aspen forests with dense regeneration or with an extensive shrub and woody debris understory may be important for snowshoe hare or other prey species (Lynx Biology Team 2000). Extensive stands of pure aspen with shrub and grass understory species may provide some summer foraging habitat but are generally poor as winter foraging areas unless intermixed with spruce-fir or young lodgepole pine stands.

Regenerating burns are often quite productive for prey species due to the mixed deciduous/conifer forests, multiple age classes, shrub layer, dense herbaceous layer, and extensive downed woody debris. High elevation sagebrush communities found in the planning area and in proximity to subalpine and upper montane forests may be important foraging areas for lynx due to high prey abundance (Squires and Laurion 2000). Other habitats that may be important for foraging include large and medium willow carrs, beaver pond complexes, and shrub dominated riparian communities (Lynx Biology Team 2000).

The common component of den sites appears to be large woody debris, either downed logs or root wads (Koehler 1990, Mowat et al. 2000, Squires and Laurion 2000). Stand structure appears to be more important than forest cover type (Mowat et al. 2000). Denning habitat in the planning area is limited and exists where dense late-successional spruce-fir forests persist with substantial amounts of large woody debris, primarily on north aspects.

Habitat of sufficient size to sustain lynx is not found on BLM lands within the planning area. As such, no exclusive BLM LAU's exist. At this time, a small percentage of mapped potential lynx habitat on

BLM lands within the planning area will be incorporated into jointly defined and managed BLM/USFS LAU's. These lands are small parcels that are located adjacent to larger forested habitats. The majority, and best quality lynx habitat within the planning area on BLM lands is located within the 4 identified habitat linkages. Habitat within these larger linkage areas will not be in an LAU, but will be managed in a manner that maintains, improves, and/or enhances the long-term functionality of the linkage. All actions that occur within jointly managed LAU's will be coordinated with USFS, State, and other appropriate land owner personnel regarding implementation of the Fire Management Plan, and potential impacts to LAU's, and habitat linkages.

### **Analysis of Effects**

Fire and vegetative treatments will benefit lynx in the long-term. The use of these tools to reduce hazardous fuels will help to minimize the potential for large catastrophic fires, and will help to maintain and improve the diversity of habitats important for lynx and lynx prey species. A lack of natural fire has reduced the quality and abundance of lynx and snowshoe hare habitat across their range. In addition, the management of wildland use fires can create openings and improve understory vegetation composition to the benefit of lynx prey species, most notably snowshoe hare. Effects to lynx on BLM lands within LAU's will be minimal as it is anticipated that only a handful of small parcels will be added to final USFS/BLM LAU's.

### **Proposed Actions Relative Effects to Lynx Productivity Risk Factors**

\*Productivity is defined here as the ability of lynx to effectively reproduce at a sustainable level.

### **Timber Management**

#### **Direct Effects**

From a FMP standpoint, the direct effects of timber management on lynx becomes an issue only if prescriptive logging treatments are used to accomplish vegetation goals. Vegetative treatments could displace lynx from established home ranges and result in lower productivity. These factors would be most critical during the denning period when kittens are present. Reductions in canopy cover could reduce denning, and security cover, until the tree species regenerate. This time lag could be significant. However, created openings in dense timber stands could result in improved snowshoe hare and other prey species habitat. This could increase winter foraging opportunities for lynx. Post-fire salvage timber operations that remove large woody debris could reduce potential denning habitat. Post-fire salvage logging decisions will be made on a site-specific basis through a separate environmental analysis and consultation. Thus, the implementation of the FMP will have little direct effect on lynx with regard to timber management.

#### **Indirect Effects**

Roads, if determined necessary to initiate timber projects, could result in indirect effects. Roads could result in temporary travel corridors for competing species and could result in competition for food or direct mortality. In addition, roads could fragment habitats and if left open for use by the public, could result in further impacts including the potential displacement of animals to less suitable habitats.

## Wildland Fire Management

### Direct Effects

The Implementation of the FMP does not direct wildland fire activities per se, as wildland fire is a natural act. However, in designated “D” zones, some wildland fire use fires may be allowed to burn and will be managed under certain conditions in order to achieve resource benefits.

Fire suppression activities could directly impact lynx and lynx habitat. The potential construction of mechanical fire line within lynx habitat, and the use of heavy equipment, could remove vegetation, reduce and fragment habitat, open areas up to competitive species, and displace animals from established home ranges.

### Indirect Effects

Suppression related activities associated with attempts to control and put out wildland fires may indirectly effect lynx productivity. The construction of mechanical fire lines, could allow for access into lynx habitat by competing species, and by the recreating public. This could reduce the quality and usability of denning, summer, and winter foraging habitats.

## Recreation

### Direct Effects

There would be no direct impacts to lynx from the implementation of the FMP with regard to recreation. This is not to say that recreation activities may not have direct impacts to lynx, rather that the FMP does not regulate or authorize recreational uses or activities.

### Indirect Effects

Fire lines, roads, and other “trails” associated with wildland fire suppression or vegetative treatments could result in indirect effects to lynx. If left open and not rehabilitated, firelines and roads could become recreational trails used by the public. This could allow access of people into lynx habitat where there would otherwise be limited access. This could cause displacement of animals into more unsuitable or marginal habitats and could limit overall productivity.

## Forest/Backcountry Roads and Trails

### Direct Effects

Implementation of the FMP would have no direct effect to lynx productivity factors with regard to forest/backcountry roads and trails. This is not to say that roads and trails, for recreation or gas production, may not have an impact, rather that the FMP does not regulate or authorize road and trail construction.

Although not authorized as roads or trails, the construction of linear openings (fire line, access routes and escape routes), for wildland fire suppression or vegetative treatments could have a direct impact to lynx by removing vegetative cover and reducing canopy cover and potential denning habitat.

### Indirect Effects

Although not authorized as roads or trails, the construction of linear openings (fire line, access routes and escape routes), for wildland fire suppression or vegetative treatments could create indirect impacts. These linear openings could be used by competing species which could compete for prey, or result in direct mortality.

If left open and not rehabilitated, linear openings could facilitate recreational use and become a trail or road which could further displace animals, and render foraging and denning habitats less useful. These factors could reduce overall productivity of the species.

### Livestock Grazing

#### Direct Effects

Implementation of the FMP would have no direct effect to lynx productivity factors with regard to livestock grazing. This is not to say that grazing may not have an impact, rather that the FMP does not regulate or authorize grazing and grazing as an action is not specifically addressed in this plan.

#### Indirect Effects

Wildland fires and vegetative treatments could result in the temporary, short-term loss of forage for lynx prey species. Livestock grazing could exacerbate the situation by limiting post fire/treatment reestablishment of key forage species. This could result in declines in lynx prey densities, thus lowering the overall productivity of lynx.

### **Proposed Actions Relative Effects to Lynx Mortality Factors**

#### Competition and Predation as Influenced by Human Activities

##### Direct Effects

Implementation of the FMP should have little direct effect regarding competition and predation as influenced by human activity.

##### Indirect Effects

Wildland fires and vegetative treatments could have indirect effects to lynx with regard to competition and predation as influenced by human activities. Human occupation of habitats during fire suppression activities could cause displacement of individual animals. Mechanical fire lines and roads associated with fire suppression and vegetative treatment could increase competition by allowing access into lynx habitat by competing species such as coyote, mountain lion, and bobcat. These animals could compete for resources and could directly result in lynx mortality.

### **Proposed Actions Relative Effects to Lynx Movement Risk Factors**

#### **Lynx Movement and Dispersal Across Shrub-Steppe Habitats**

##### Direct Effects

Implementation of the FMP should have minimal long-term direct affect on lynx's ability to move and disperse across shrub-steppe habitats. However, in the short-term impacts could occur. Losses of vegetation could reduce cover for movement and reduce prey densities for a short time.

#### Indirect Effects

Wildland fire and vegetative treatments could reduce the usability of shrub-steppe habitats on a short-term basis. These treatments could result in a short-term reduction in available forage for snowshoe hare and other prey species. In addition, vegetative cover would be reduced potentially limiting lynx's ability to move through portions of the landscape.

#### **Identified Landscape Linkages**

Currently, four habitat linkages have been identified within the GSFO. These habitat linkages are comprised of public, private, and state land located between larger forested landscapes. A variety of vegetative communities currently make up these linkages including shrub-steppe, pinyon-juniper, spruce, fir, lodgepole, aspen, oakbrush, agricultural, grassland, wet meadow, and riparian. Portions of these linkages contain habitat (summer forage, winter forage, and denning habitat) necessary to support and sustain lynx. The remainder and majority of lands within the linkage areas do not contain lynx habitat. These lands contain habitats that provide cover for movement and dispersal. The primary function of these dispersal corridors is to connect important forested landscapes containing vital habitats. These larger forested areas occur primarily on the White River, and Routt National Forests in north-central, Colorado.

Overall, the implementation of the FMP should help to improve habitat conditions within the habitat linkages. Wildland fires and vegetative treatments will reduce hazardous fuels and reduce the risk for large catastrophic wildfires while increasing and improving vegetative ground cover and maximizing foraging opportunities.

Within designated "D" zones, there is the potential to let vegetation burn within mapped habitat linkages. However, lynx landscape linkages will be considered along with numerous other resource values and concerns, during a "let burn" scenario. These linkages will be managed in a manner that maintains, improves, and/or enhances the long-term functionality of the linkage regardless of the "zone" in which the linkage resides, while allowing fire to play a more natural ecosystem role. Subsequent landscape linkage management planning will set more specific direction as to the management of individual linkages and will better guide the use of fire within these landscapes. The BLM is a participant in an interagency effort to develop a lynx linkage corridor management plan for Colorado. These management guidelines will be incorporated into existing Land Use Planning documents via the Land Use Plan Amendment Process scheduled for 2004 and 2005.

The "D" designation would allow fires to burn and take a more natural course only under certain conditions/prescriptions. If conditions are such that prompt suppression could not be done in a "D" zone, then all fires would be aggressively attacked. The "D" zone designation is more for when multiple fire starts occur across several zones and initial attack strategies are planned. "D" zones would have the lowest suppression priority in a multiple fire scenario. Under extreme fire conditions it is likely that all fires would be suppressed regardless of the zone. Therefore, it is not anticipated that any "let burn" scenario would significantly reduce or impair any habitat linkage. Fire size under certain prescriptive conditions is anticipated to be relatively small. As with all

wildlife fires, if such an event occurs within a habitat linkage Emergency Consultation will be promptly initiated and effects documented and mitigated to the extent practicable.

#### Direct Effects

The implementation of the FMP should have minimal long-term direct impacts to lynx regarding their ability to move through the landscape. There is the possibility that in the short-term vegetative cover will be reduced and cover and foraging habitat lost until regeneration occurs.

#### Indirect Effects

Lynx could be indirectly affected due to decreased cover and foraging habitat. This could displace lynx from more suitable movement corridors to less desirable areas. This could decrease the chances of successful dispersal across the landscape.

To reduce effects, both direct and indirect, to lynx from wildland fire suppression activities and the implementation of vegetative treatments, the following minimization measures will be followed within identified lynx habitat:

- Attempts will be made to keep linear openings (fire line, access routes and escape routes) out of mapped potential habitat, while attempting to protect key components such as denning areas.
- Avoid constructing permanent firebreaks on ridges or saddles in lynx habitat.
- When managing wildland fire or planning vegetation treatments, minimize creation of linear openings (fire line, access routes and escape routes) that could result in permanent travel ways for competitors and humans.
- Linear openings (fire line, access routes and escape routes) associated with fire suppression or vegetative treatments constructed within lynx habitat will be obliterated and reclaimed in order to deter future human and competitive species use.
- All vegetation treatments will be planned in a manner consistent with the goals and objectives outlined in the *Canada Lynx Conservation Assessment and Strategy* (2000). Planning of treatments will ensure that no more than 30% of lynx habitat within an Lynx Analysis Unit will be in unsuitable condition at any time. If the 30% threshold is already exceeded then no further reduction shall occur as a result of vegetation management. In addition, particular consideration will be given to amounts of denning habitat, condition of summer foraging, winter foraging and shrub-steppe habitats, and habitat linkages, to ensure that treatments do not negatively impact lynx.

#### Post-fire / Post-treatment mitigation

- Livestock grazing may be deferred in openings created by wildland fires or vegetative treatments to ensure the reestablishment of key plant species. Resource goals and objectives will be used to determine the need for this restriction and the length of the deferment on a case by case basis.

#### **Determination of Effects**

The implementation of the FMP with the minimization measures noted above, should reduce impacts to insignificant, discountable levels. **Therefore, it is the determination that the implementation of the FMP with the proposed minimization measures “May Affect, but is Not Likely to Adversely Affect” the Canada Lynx.** However, if during a severe fire event that threatens life or property, these minimization measures can not be adhered to, then Canada lynx could be adversely affected. The potential construction of mechanical fire line within lynx habitat, and the use of heavy equipment, could

reduce and fragment habitat, open areas up to competitive species, and displace animals from established home ranges. All of these impacts would be short term. Lynx could be impacted indirectly through the construction of fire lines, which could increase competition and reduce habitat usability. In the event the minimization measures can not be adhered to, Emergency Consultation will be promptly initiated, and adverse impacts documented and mitigated for to the extent practicable.

In addition, vegetative treatments within lynx habitat may have short term impacts due to time lags associated with regeneration of key species including lodgepole pine, aspen, fir and spruce. This could alter prey distribution and abundance, thus reducing winter and summer foraging opportunities, and reduce security and denning cover. The potential impacts associated with vegetative treatments will be covered at the project level through a site specific NEPA document and where appropriate, BA.

### **Uinta Basin hookless cactus**

#### **Affected habitat description and status within the planning area**

The Uinta Basin hookless cactus occurs in western Colorado and eastern Utah on gravelly alluvial terraces, rocky hills and mesa slopes at elevations ranging from 4,500 to 6,000 feet. In the GSFO planning area, the cactus is found between DeBeque and Parachute in salt desert shrub habitats dominated by shadscale, sagebrush, greasewood and galleta grass. Some sites also have heavy concentrations of cheatgrass.

#### **Analysis of effects**

##### **Direct Effects**

The implementation of the FMP should result in minimal direct impacts to this species. The habitat for the cactus was incorporated into fire management zone “A-140-01” which means wildland fires will receive prompt suppression action commensurate with human safety.

Fire suppression activities could have adverse impacts to cactus populations. Fire line construction in cactus habitat may destroy individual cactus plants and render some habitat unsuitable.

Mechanical or chemical vegetation treatments could cause adverse impacts to the threatened cactus populations by crushing or poisoning individual plants.

##### **Indirect Effects**

In areas where cheatgrass is present or has the potential to invade, fire or other vegetative treatments could result in increases in cheatgrass which may inhibit germination and establishment of cactus seedlings. Uinta Basin hookless cactus plants often utilize shrubs as nurse plants to provide shade, moisture and protection from trampling. Vegetative treatments that remove the shrub overstory may have detrimental impacts to the survival and regeneration of the cactus plants. Conversely, vegetative treatments designed to minimize the potential for catastrophic fires will benefit the cactus population.

To reduce the direct and indirect effects to Uinta Basin hookless cactus from wildland fire suppression activities and vegetative treatments, the following minimization measures will be followed within identified cactus habitat:

- Minimize surface disturbance by using retardant, water, engines/wet lines, etc in known habitat for this species.
- Where firefighter safety is not compromised, construct fire line outside the perimeter of known cactus populations.
- Avoid off-road use of motorized vehicles and mechanical equipment within known cactus populations.
- Vegetative treatments will avoid known cactus populations.
- Vegetative treatments will be designed to limit the spread of cheatgrass and enhance Uinta Basin hookless cactus habitat.

### **Determination of effects**

The implementation of the FMP with the minimization measures noted above, should reduce impacts to insignificant, discountable levels. **Therefore, it is the determination that the implementation of the FMP with the proposed minimization measures “May Affect, but is Not Likely to Adversely Affect” the Uinta Basin hookless cactus.** However, if during a severe fire event that threatens life or property, these minimization measures can not be adhered to, then this species could be adversely affected. Fire line construction could destroy individual plants, and render some habitat ineffective to colonization. In addition, fire could result in increases in cheat grass, an invasive competitor. In the event this situation occurs, Emergency Consultation will be promptly initiated, and adverse impacts documented and mitigated for to the extent practicable.

### **Boreal toad**

#### **Affected habitat description and status within the planning area**

Boreal toads range from approximately 7,500 ft. in elevation to over 12,000 feet. In Colorado, this species generally occupies springs, streams, ponds, bogs, wet meadows, and lakes in foothill woodlands, mountain meadows, and moist subalpine forests. Although some potential habitat for this species exists within the planning area boundary, limited surveys conducted by BLM/CDOW biologist in 1994 resulted in the detection of no boreal toads.

### **Analysis of effects**

Overall, effects to this species should be minimal. There is limited habitat for boreal toads on BLM lands located within the planning area. Although not all aquatic systems within the elevational range of the species have been surveyed, BLM/CDOW cooperative surveys conducted in 1994 of suitable habitat resulted in the detection of no boreal toads.

#### **Direct Effects**

Wildfires and related suppression actions can impact aquatic wildlife including boreal toads. In particular the use of fire retardant can result in immediate and direct impacts to boreal toads. Fire retardant when mixed with water and exposed to UV radiation, breaks down to form hydrogen cyanide (HCN), which is extremely toxic to aquatic life. In addition, Ammonia (NH<sub>3</sub>), which is highly soluble will result when retardant is placed into water. When ammonia dissolves in water a chemical equilibrium is maintained between ammonia, which is toxic, and ionized ammonia (NH<sub>4</sub><sup>+</sup>) which is less-toxic. The chemical balance between these 2 forms of ammonia is determined by pH, temperature, and total ammonia concentration. In most streams, the pH is sufficiently low and NH<sub>4</sub><sup>+</sup> predominates. However, in highly alkaline waters, NH<sub>3</sub> concentrations increase and can



reach toxic levels. Ammonia in the range of 0.2 to 2.0 mg/L can be lethal to fishes. The toxicity of retardant to aquatic life is generally due to these two components (free cyanide and ammonia), and may be enhanced within closed aquatic environments such as ponds, lakes, and reservoirs that harbor this species.

Other factors resulting from wildland fires include the potential for large, acute influxes of heated slag and ash which can have both immediate and direct impacts. This is due mainly to elevated water temperatures to lethal limits. Water quality is also impaired as changes in pH and phosphate can result when leached from ash. The best potential boreal toad habitat located on BLM lands within the planning area is located within FMZ D-140-02. This “D” zone could allow wildland use fire which could potentially result in the above impacts.

#### Indirect Effects

Longer term impacts can result due to increases in runoff and higher peak flows, until adequate vegetation stabilizes soils and retains water. Other suppression efforts could also result in some short-term impacts, including the construction of fire lines which could increase erosion.

To reduce potential impacts, both direct and indirect, the following minimization measure will be followed:

- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life. (See exceptions under southwest willow flycatcher).

#### **Determination of effects**

The implementation of the FMP with the minimization measure noted above, should reduce impacts to insignificant, discountable levels. **Therefore, it is the determination that the implementation of the FMP with the proposed minimization measure “May Affect, but is Not Likely to Adversely Affect” the Boreal toad.** However, if during a severe fire event that threatens life or property, the minimization measure can not be adhered to, then this species could be adversely affected. Large influxes of ash, sediment, and fire retardant, into occupied habitats could negatively affect boreal toads. In the event this situation occurs, Emergency Consultation will be promptly initiated, and adverse impacts documented and mitigated for to the extent practicable.

#### **Western yellow-billed cuckoo**

##### **Affected habitat description and status within the planning area**

This species habitat consists of riparian cottonwood-willow galleries. This species historically occurred in portions of western Colorado, although this species was likely never common, and no individuals have been recorded or confirmed to nest on public lands located within the planning area.

##### **Analysis of effects**

Implementation of the FMP should have minimal long-term or direct impacts to this species. No western yellow-billed cuckoo's are known to nest on BLM lands within the planning area. Suitable habitat may be present along small scattered portions of the Colorado River and suitably vegetated tributaries. However, no habitat has been defined for this species within the planning area.

### Direct Effects

There is the possibility that vegetative treatments, and suppression actions could directly impact this species. The use of fire retardant, and noise from heavy equipment in close proximity to occupied habitats (should occupation ever occur) could have short-term, direct impacts to nesting birds and could impact nesting success and productivity.

### Indirect Effects

Fire, associated suppression activities, and vegetative treatments should have little indirect effect to this species.

In order to minimize potential impacts, both direct and indirect, to this species, the following minimization measures will be followed:

- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life. (See exceptions under southwest willow flycatcher).

### **Determination of effects**

The minimization measure will reduce adverse impacts to potential yellow-billed cuckoo habitat. No birds are known to nest within the planning area on BLM lands. There is the possibility that direct disturbance could occur via smoke, noise, and human presence should nesting ever occur within the planning area. **Therefore, it is the determination that the proposed implementation of the FMP with the minimization measures “may affect but is not likely to adversely affect the yellow-billed cuckoo”.**

### **Gunnison sage grouse**

#### **Affected habitat description and status within the planning area**

The Gunnison sage grouse is a recently delineated species of grouse that is currently known to reside in portions of southwestern Colorado and Southeastern Utah. This species may occupy potential habitat within sagebrush stands located south of the Eagle River. However, this species has not been documented as occurring within the planning area. This species is a sagebrush obligate that requires a diverse age-class of sagebrush, as well as open grassland habitats with a diverse forb component. Much of the potential habitat for this species south of the Eagle river in FMZ B-140-05 has been impacted due to private land development near the towns of Eagle and Gypsum. This has resulted in direct habitat loss, and habitat fragmentation. In addition, aggressive fire suppression and historic grazing have reduced the quality of habitats located on BLM lands in this area.

#### **Analysis of effects**

Sage grouse sign is occasionally noted south of the Eagle river, but no documented Gunnison sage grouse have been confirmed to reside within the planning area. Fire historically maintained habitats important to this species. The FMZ, B-140-05, recognizes that potential Gunnison sage grouse habitat exists within the FMZ. FMZ management goals include increasing the quantity and quality of sagebrush shrublands for sagebrush-dependent species. In the long-term, implementation of the FMP should protect and enhance potential Gunnison sage grouse habitat. With the implementation of

prescriptive vegetation treatment guidance, the FMP could increase habitat suitable for the introduction or re-introduction of the species.

#### Direct Effects

Fire can directly impact nesting birds and young and can result in direct mortality of individuals. The use of heavy equipment, smoke, and human activity can effect birds, particularly during the nesting season. Fire line in sage grouse habitat can fragment habitat and result in losses of key vegetation. Treatments may reduce the abundance and quality of key habitats in the short-term and reduce foraging quality. However, treatments would likely be to the long-term benefit of the species as all treatments occurring within sage grouse habitat would be designed to improve the long-term condition of sagebrush stands.

#### Indirect Effects

Vegetative treatments may indirectly effect sage grouse. Portions of sage grouse habitat could be reduced in quality and quantity, resulting in the use of less suitable habitats for a short time. This could effect sage grouse productivity. However, treatments would likely benefit sage grouse in the long-term as all treatments occurring within sage grouse habitat would be designed to improve the long-term condition of sagebrush stands.

Although not currently documented as residing within the planning area, the following minimization measures will apply and should reduce potential impacts, both direct and indirect, to all sage grouse species occurring within the planning boundary:

- Vegetative treatments will avoid known lek sites, and no activity will be allowed within 1/4 mile of active lek sites from March 15 to May 31.
- Aggressively suppress wildland fires in sagebrush vegetation within mapped sage grouse habitats to minimize expansive losses of sagebrush habitats.
- Identify and avoid known lek sites when managing wildland fire and using heavy equipment.
- In sage grouse winter habitats, protect unburned patches of sagebrush within the fire perimeter.
- Evaluate wildland fires to determine whether native reseeding is necessary, particularly within areas of known cheatgrass, to achieve habitat management objectives as recommended in the *Guidelines to manage sage grouse populations and their habitats (Connelly, Schroeder, Sands and Braun 2000)*.
- Vegetation treatments within sage grouse habitats will be designed in accordance with recommended prescriptions found in the *Guidelines to manage sage grouse populations and their habitats (Connelly, Schroeder, Sands and Braun 2000)*.
- Prior to development and implementation of vegetative treatments, and prescribed fires in particular, areas will be surveyed for the presence of cheatgrass to assist in determining size, method, and use of treatments.

#### **Determination of effects**

Gunnison sage grouse have not been documented as occurring within the planning area, although sage grouse sign south of the Eagle and Colorado Rivers is still occasionally noted. The implementation of the FMP with the minimization measures noted above, should reduce impacts to insignificant, discountable levels. **Therefore, it is the determination that the implementation of the FMP with the proposed minimization measures “May Affect, but is Not Likely to Adversely Affect” the**

**Gunnison sage grouse, should they occur within the planning area.** However, if during a severe fire event that threatens life or property, the minimization measure can not be adhered to, then this species or their habitat, could be adversely affected. Fire lines constructed in sage grouse habitat could result in fragmentation of habitat and result in losses of key vegetation. Treatments could have some short-term impacts associated with reduced habitat quality. In the event this situation occurs, Emergency Consultation will be promptly initiated, and adverse impacts documented and mitigated for to the extent practicable.

### **Parachute penstemon**

#### **Affected habitat description and status within the planning area**

The Parachute penstemon is currently known to occur in four locations within the GSFO planning area. The penstemon is limited to sparsely vegetated, steep, shale talus slopes of the Parachute Creek member of the Green River Formation at elevations ranging from 8,000 to 9,000 feet. The sparse vegetation where the penstemon occurs limits the potential for fire to carry through its habitat.

#### **Analysis of effects**

##### **Direct Effects**

The probability of a fire occurring in Parachute penstemon habitat is highly unlikely due to the sparse vegetation. Because of the sparse vegetation, there should be no need to construct a fire line or reduce hazardous fuels within the habitat. Most of the habitat occurs on steep slopes which would preclude vehicular traffic. Therefore, the impacts of fire suppression activities or vegetation treatments would be insignificant.

##### **Indirect Effects**

In several places, Parachute penstemon is found within road cuts and fills. Widening of existing roads to improve access for fire suppression equipment and off-road vehicular travel has the potential to destroy individuals or populations of the Parachute penstemon.

To ensure full protection of the species and its habitat, the following minimization measures will be required:

- Minimize surface disturbance by using retardant, water, engines/wet lines, etc in known habitat for this species.
- Where firefighter safety is not compromised, avoid road widening or off-road use of motorized vehicles and mechanical equipment in occupied habitat.

#### **Determination of effects**

The minimization measures will reduce adverse impacts to Parachute penstemon habitat. **Therefore, it is the determination that the proposed implementation of the FMP with the minimization measures “may affect but is not likely to adversely affect the Parachute penstemon”.**

### **DeBeque phacelia**

#### **Affected habitat description and status within the planning area**

DeBeque phacelia is an annual plant endemic to Garfield and Mesa Counties in Colorado. The plant grows on sparsely vegetated, steep slopes of chocolate-brown or gray clays in the Wasatch Formation at elevations between 4,700 and 6,200 feet. Fire is rare to nonexistent in this community type due to the sparse vegetation which cannot carry a fire.

Potential habitat is scattered throughout the foothills between Rifle and Debeque, but at this time, the only two known populations of DeBeque phacelia in the GSFO planning area are both north of the Garfield County Landfill. These sites are sparsely vegetated and extremely steep.

## **Analysis of effects**

### Direct and Indirect Effects

Fire, associated suppression activities, and vegetative treatments should have little direct or indirect effect to this species. Due to the steep, sparsely vegetated nature of the habitat where this plant grows, there is little likelihood that the habitat where the plant occurs would be susceptible to burning and little or no need to construct fireline within the habitat. There should be little affect to this species from implementing the proposed FMP.

In order to minimize any potential impacts, both direct and indirect, to this species, the following minimization measures will be followed:

- Minimize surface disturbance by using retardant, water, engines/wet lines, etc in known habitat for this species.
- Where firefighter safety is not compromised, avoid off-road use of motorized vehicles and mechanical equipment in occupied habitat.

## **Determination of effects**

The minimization measures will reduce adverse impacts to Debeque phacelia habitat. **Therefore, it is the determination that the proposed implementation of the FMP with the minimization measures “may affect but is not likely to adversely affect the Debeque phacelia”.**

## **Greater sage grouse**

### **Affected habitat description and status within the planning area**

Sage grouse are a sagebrush obligate species that require a diverse age-class of sagebrush and open grassland habitats. Forbs are an important food source as are insects. This species has declined dramatically within the past 20 years within large portions of its historic range. This species was historically widespread in portions of the planning area within the larger sagebrush habitats. Current populations within the planning area are located north of Wolcott, Colorado on scattered BLM and private lands.

This species evolved with fire and fire historically maintained the vegetative communities important for this species. Due to many years of fire suppression, habitats for this species have been reduced in quantity and quality. Many sagebrush stands are old and decadent with a poor herbaceous understory, and others have been invaded and in many cases taken over by tree species. Development of private lands has significantly reduced and fragmented habitats important to this species.

## **Analysis of effects**

Fire historically maintained habitats important to this species. The FMP recognizes greater sage grouse habitat exists within the planning area. Greater sage grouse are recognized as a resource value in FMZs; A-140-05, B-140-06, B-140-07, C-140-03. FMZ goals include increasing the quantity and quality of sagebrush shrublands for sagebrush-dependent species. Long-term implementation of the FMP is designed to maintain/enhance greater sage grouse habitat. With the implementation of prescriptive vegetation treatment guidance, the FMP could increase the quality and quantity of habitat suitable for the species.

### Direct Effects

Fire can directly impact nesting birds and young and can result in direct mortality of individuals. The use of heavy equipment, smoke, and human activity can effect birds, particularly during the nesting season. Fire line in sage grouse habitat can fragment habitat and result in losses of key vegetation. Treatments may reduce the abundance and quality of key habitats in the short-term and reduce foraging quality.

### Indirect Effects

Vegetative treatments may indirectly effect sage grouse. Portions of sage grouse habitat could be reduced in quality and quantity, resulting in the use of less suitable habitats. This could effect sage grouse productivity.

The following minimization measures will apply and should reduce potential impacts, both direct and indirect, to sage grouse species occurring within the planning boundary:

- Vegetative treatments will avoid known lek sites, and no activity will be allowed within 1/4 mile of active lek sites from March 15 to May 31.
- Aggressively suppress wildland fires in sagebrush vegetation within mapped sage grouse habitats to minimize expansive losses of sagebrush habitats.
- Identify and avoid known lek sites when managing wildland fire and using heavy equipment.
- In sage grouse winter habitats, protect unburned patches of sagebrush within the fire perimeter.
- Evaluate wildland fires to determine whether reseeding is necessary to achieve habitat management objectives as recommended in the *Guidelines to manage sage grouse populations and their habitats* (Connelly, Schroeder, Sands and Braun 2000)..
- Vegetation treatments within sage grouse habitats will be designed in accordance with recommended prescriptions found in the *Guidelines to manage sage grouse populations and their habitats* (Connelly, Schroeder, Sands and Braun 2000).

## **Colorado River cutthroat trout**

### **Affected habitat description and status within the planning area**

Colorado River cutthroat trout are the native trout of the upper Colorado River basin and were once common throughout the drainage. Today, populations are restricted mainly to small headwater streams and lakes. Several streams located on public lands within the planning area contain populations of Colorado River cutthroat trout. The most prominent being, Abrams Creek, Mitchell Creek, Northwater Creek, Trapper Creek, East Fork Parachute Creek, East Middle Fork Parachute Creek, and North Thompson Creek.

Range wide, this species has been declining. Within the planning area, many populations have been replaced by non-native salmonids. Where conservation populations exist, numbers are generally stable. Impacts to these fish are mainly attributed to introductions of non-native salmonids including rainbow, brown, and brook trout. These species compete for food, cover, and physical habitat and have displaced the native cutthroat in many stream reaches. In addition, where rainbow and cutthroat co-exist, the potential for crossing is high. This reduces genetic purity and compromises species diversity. Other potential impacts result from livestock grazing, ohv and transportation management, weeds, water availability, and non-native fishes.

### **Analysis of effects**

Overall, Colorado River cutthroat trout should benefit from the implementation of the Fire Management Plan. The reduction of hazardous fuels will also reduce the potential for large catastrophic fire events that could significantly impair water quality and increase erosion. Vegetative treatments will help to improve upland habitat conditions that will minimize erosion concerns and will reduce sedimentation and water quality concerns. In addition, studies have shown that large wildland fires are important to maintain and provide long-term stream habitat complexity that can benefit instream biodiversity and threatened and endangered species habitat (Everest et al. 1987. Reeves et al. 1995).

#### Direct Effects

Wildfires and related suppression actions can impact fishes. In particular the use of fire retardant can result in immediate and direct impacts to fishes. Fire retardant when mixed with water and exposed to UV radiation, breaks down to form hydrogen cyanide (HCN), which is extremely toxic to aquatic life. In addition, Ammonia ( $\text{NH}_3$ ), which is highly soluble will result when retardant is placed into water. When ammonia dissolves in water a chemical equilibrium is maintained between ammonia, which is toxic, and ionized ammonia ( $\text{NH}_4^+$ ) which is less toxic. The chemical balance between these two forms of ammonia is determined by pH, temperature, and total ammonia concentration. In most streams, the pH is sufficiently low and  $\text{NH}_4^+$  predominates. However, in highly alkaline waters,  $\text{NH}_3$  concentrations increase and can reach toxic levels. Ammonia in the range of 0.2 to 2.0 mg/L can be lethal to fishes. The toxicity of retardant to aquatic life is generally due to these two components (free cyanide and ammonia).

Other factors resulting from wildland fires include the potential for large, acute influxes of heated slag and ash which can have both immediate and direct impacts to fishes. This is due mainly to elevated water temperatures to lethal limits. Water quality is also impaired as changes in pH and phosphate can result when leached from ash.

#### Indirect Effects

Longer term impacts can result due to increases in runoff and higher peak flows, until adequate vegetation stabilizes soils and retains water. Other suppression efforts could also result in some short-term impacts, including the construction of fire lines which could increase erosion.

To reduce potential impacts, both direct and indirect, to Colorado River cutthroat trout, the following minimization measures will be followed:

- Attempts will be made to minimize losses of vegetation within 100 yards of occupied drainages. This intended to minimize the potential for erosion of sediments into occupied waters.

- In conjunction with the reclamation of fire lines, provide for drainage with water bars on constructed hand/dozer lines and impacted areas in critical watershed areas (see Part 12 for guidelines).
- Develop vegetative treatments to minimize impacts to cutthroat trout in consultation with the Field Office biologist and following guidelines outlined in the *Conservation Agreement and Strategy for Colorado River Cutthroat Trout in the States of Colorado, Utah, and Wyoming, April 2001*.
- Avoid aerial application of retardant or foam within 300 feet of any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life. (See exceptions under southwest willow flycatcher).

## **V. CUMULATIVE EFFECTS**

The combined, incremental effects of many individual activities, are referred to as *cumulative impacts*. As defined under the Endangered Species Act: **Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological assessment. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.** While single actions may be insignificant by themselves, impacts can accumulate over time from various actions. That combination of impacts can negatively and positively impact lands and resources.

The following were identified as the primary factors affecting special status species within the planning area.

### **1. Changes in Ecosystem Structure and Function**

Ecosystem structure and function are being changed throughout the planning area by a variety of human activities. Fire suppression and forestry operations have affected the historical disturbance regime in this region, resulting in altered successional patterns. This in turn affects prey species composition and distribution as well as predator distribution.

Fire is a natural event in the Rocky Mountain West. The identified species are generally either fire tolerant or fire dependent. Previous fire management policies failed to recognize the role of fire in sustaining fire-adapted species and fire-dependent ecosystems. Previous fire suppression practices may actually have increased risks to native plants and wildlife.

Noxious weeds spread by vehicles, people and livestock allow the establishment of invasive weeds into areas previously not infested.

### **2. Changes in Habitat (Loss, Fragmentation, Degradation)**

There are many human activities within the region which change habitat. They include but are not limited to; highway/road building/upgrading, powerlines, railroads, mining, ski area development, natural gas development, agriculture/livestock management, development/urbanization, tourism, recreation and vehicle use. These activities result in the direct removal of habitat or a reduction in the use of remaining habitat due to the initial or



ongoing disturbance. Habitat fragmentation and disturbance often results in impediments in habitat linkages.

The population of Colorado grew by 30.6% between 1990 and 2000 to 4,301,261. This was much greater than the national U. S. growth rate of 13.1%. The population of counties located within the planning area generally increased as well. Eagle County increased by 90%, Routt County increased by 39.8%, Garfield County increased by 46.1%, Pitkin County increased 17.5%, and Rio Blanco County decreased by 1.1 % (U. S. Census Bureau).

Land use patterns and trends are expected to continue relatively unchanged across Colorado. Habitat on private lands will continue to be modified to meet the needs of increasing populations.

The population trend and Colorado's status as a popular travel destination, will likely generate more social, recreational and economic demands of the surrounding public lands to meet the needs of new residents and visitors.

### **3. Human Induced Mortality**

An increasing human population; an increase in travel on highways, roads and trails; and increased access into special status species habitat elevates the risk of death due to vehicle collisions, poaching and interaction with humans. Potential deaths resulting from relocating reintroduced species may also contribute to mortality.

Changes in the ecosystem, changes in habitat, and human-induced mortality will likely increase and expand as the population of Colorado continues to grow. These factors are in varying degrees affecting special status species or their habitat. Considering the past, present, and reasonably foreseeable trends for activities in the region, it is likely that negligible to minor cumulative impacts will occur to listed species from the implementation of the GSFO draft FMP. Over time it is generally assumed that the implementation of the FMP, with the prescriptive vegetation treatment guidance and the associated minimization measures, can and will benefit listed species by preventing catastrophic wildfire and enhancing special status species habitat.

Implementation of FMP with the outlined minimization measures should reduce potential impacts to insignificant and discountable levels. The interdisciplinary procedure process was designed to eliminate or lessen adverse consequences of implementing the GSFO draft FMP. However, if during a wildland fire situation any of the minimization measure can not be adhered to, it is possible that some individual species of plants and animals could be adversely effected due to wildland fire and fire suppression activities. Loss of individual species of plants or animals is expected to be minimal under the GSFO draft FMP because; 1) special status species considerations were integrated, upfront, into the GSFO draft FMP and 2) minimization measures have been identified to help reduce potential losses.

## **VI. LITERATURE CITED**

Connelly, J.W., Schroeder, M.A., Sands, A. R. and C. E. Braun. 2000. Guidelines to Manage Sage Grouse Populations and Their Habitats. Wildlife Society Bulletin 2000, 28(4):967-985

CRCT Task Force. 2001. Conservation Agreement and Strategy for Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) in the States of Colorado, Utah, and Wyoming. Colorado Division of Wildlife, Fort Collins. 87p.

Everest F. H. et al. 1987. Chapter 4. Fine Sediment and salmonid production: a paradox. p. 98-142. In: E. O. Salo and T. W. Cundy (Eds.). Streamside management: forestry and fisheries interactions, Contr. 57, Univ. Washington, Inst. Of For. Resources. 471 p.

Koehler, G. M. 1990. Population and habitat characteristics of lynx and snowshoe hares in north central Washington. Canadian Journal of Zoology 68: 845-851.

Lynx Biology Team. 2000. Canada lynx conservation assessment and strategy. Prepared by Ruediger, B., et al. USDA Forest Service. 120 pp.

Mowat, G., K. G. Poole, and M. O'Donoghue. 2000. Ecology of lynx in northern Canada and Alaska. Chap. 9 In Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, et al. tech. eds. Ecology and conservation of lynx in the United States. Univ. Press of Colorado, Boulder. 480 pp.

Reeves, G. H., Benda L. E., K. M. Burnett, P. A. Bisson, J. R. Sedell. 1995. A disturbance-based ecosystem approach to maintaining and restoring freshwater habitats of evolutionarily significant units of anadromous salmonids in the Pacific Northwest. American Fisheries Society Symposium. American Fisheries Society 17:334-349.

Reudiger, B. et. al. 2000. Canada Lynx Conservation Assessment and Strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Publication # R1-00-53, Missoula, MT. 142 pp.

Squires, J. R. and T. Laurion. 2000. Lynx home range and movement in Montana and Wyoming-preliminary results. Chap. 11 In Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, et al. tech. eds. Ecology and conservation of lynx in the United States. Univ. Press of Colorado, Boulder. 480 pp.

U.S. Department of the Interior, Fish and Wildlife Service (USFWS). 1989. Black-Footed Ferret Survey Guidelines for Compliance with Endangered Species Act. USDI Fish and Wildlife Service. Denver, Colorado.